

incorporating the dopant into the material by pulsed energy processing
using pulsed energy selected from the group consisting of pulsed laser energy
and pulsed ion-beam energy to produce a dose of [at least] ^{about 10^{15}} ~~10^{14}~~ [to 10^{15}] cm^{-2}
electrically active dopant atoms per energy pulse.

Claim 3, cancel.

Claim 4, cancel.

Claim 9, amend to read as follows:

6. (Twice Amended) An improved semiconductor doping process
comprising:

depositing a layer of dopant atoms/molecules on a surface of a
semiconductor in an atmosphere selected from the group consisting of BF_3 , PF_5 ,
 AsH_3 , B_2H_6 , PH_3 , AsF_5 , PH_3 , and organometallics, followed by exposure to one or
more energy pulses using a pulsed ion-beam machine or a pulsed laser supplied
with a wavelength such that the energy is absorbed in the near surface region of
the semiconductor which melts a portion of the semiconductor, forming a
molten region thereby causing the dopant atoms/molecules to be incorporated
into the molten region at a dose rate of [at least 10^{15}] ^{about 10^{15}} ~~10^{14}~~ cm^{-2} per energy pulse;
and

allowing the molten region to recrystallize whereby the dopant
atoms/molecules are electrically active in the semiconductor.

Claim 11, cancel.

Claim 12, line 2, cancel "a pulsed ion-beam machine or."

Claim 13, cancel.

Claim 18, amend to read as follows:

13. (Amended) In a process for doping a semiconductor material using
pulsed laser energy or pulsed ion-beam energy processing, the improvement
comprising:

B3
canceled

forming a layer of dopant atoms on a surface of the semiconductor material from the group consisting of BF_3 , PF_5 , AsH_3 , B_2H_6 , PH_3 , AsF_5 , and organometallics prior to pulsed energy processing to produce a dopant dose rate of ~~10¹⁴~~ ^{about 10¹⁵} cm⁻² electrically active dopant atoms per energy pulse.

Objection to the Specification

The objection to the abstract is deemed overcome by canceling lines 12-15 of page 15.

The 35 USC 102 Rejections

Claims 1 and 9 are rejected under 35 USC 102(b) as being anticipated by Narayan et al. The subject matter of Claims 3 and 4 has been added to Claim 1, and the subject matter of Claims 11 and 13 has been added to Claim 9. Narayan et al. clearly fail to teach the features of Claim 1 and 9 as now amended. Further, Claims 1 and 9 have been amended to set forth the dose rate per pulse is 10^{14} cm⁻², which is not taught in Table 1 of Narayan et al. Thus this ground of rejection should be withdrawn.

The 35 USC 103 Rejections

Claims 2-7 and 10-20 are rejected under 35 USC 103(a) as being unpatentable over Narayan et al. The subject matter of Claims 2 and 3 and Claims 11 and 13 has been added to respective parent claims 1 and 9, and these claims canceled. Claim 18, like parent Claims 1 and 9, has been amended to set forth the dose rate per pulse as being 10^{14} cm⁻², which is not taught by Narayan et al. Further, there is no teaching found in Narayan et al. of using pulsed energy having a